CLAIMS

What is claimed is:

1. A printer comprising:

an ink head comprising a nozzle unit to eject ink drops in a shingling mode providing edge printing;

an ink collector positioned under paper to correspond to the nozzle unit and collect ink digressing from the paper; and

a plurality of support beams extending at an upper portion of the ink collector in a paper feed direction and in an opposite direction to the paper feed direction and alternately arranged with each other in a scan direction.

2. The printer of claim 1, wherein the support beams comprise :

a first support beam extending from a paper feed side of the ink collector in the paper feed direction; and

a second support beam extending from a paper discharge side of the ink collector in the opposite direction to the paper feed direction.

3. The printer of claim 2, wherein the first and second support beams extend to have the same length to support the paper.

4. The printer of claim 3, wherein an end point of the first support beam and an end point of the second support beam face each other in the scan direction.

5. The printer of claim 3, wherein the end portion of the first support beam extends in the paper feed direction to interlace with that of the second support beam.

6. The printer of claim 4, wherein one first and second support beams have the same height in a direction toward the ink head, the direction perpendicular to the paper feed direction and the scan direction.

7. The printer of claim 5, wherein the first and second support beams have the same height in a direction toward the ink head, the direction perpendicular to the paper feed direction and the scan direction.

8. The printer of claim 7, wherein the support beam extends from a barrier, which partitions the ink collector.

9. The printer of claim 7, wherein the support beam is a rib segmenting a space of the ink collector without partitioning it.

10. The printer of claim 2, wherein the second support beam has a round end portion.

11. The printer of claim 2, wherein the second support beam has a slant end portion inclining in the paper feed direction.

12. A shingling method to provide edge printing, comprising:

feeding paper such that an edge portion of the paper is located under a nozzle unit of an ink head and printing first data on the edge portion of the paper positioned between support beams supporting the paper, the first data being generated by masking data corresponding to positions of the support beams; and

moving the paper in a paper feed direction by a predetermined width and printing second data on the edge portion of the paper positioned between support beams.

13. The shingling method of claim 12, wherein the first data and the second data are in a complementary relationship.

14. The shingling method of claim 12, wherein in the paper feeding operation, masking is performed using a first mask in which a number of consecutive 0% printing columns, which are alternately distributed with a number of 100% printing columns, gradually changes in inverse proportion to the number of consecutive 100% printing columns in a scan direction perpendicular to the paper feed direction.

15. The shingling method of claim 14, wherein in the paper moving operation, the second data is generated by performing masking using a second mask, which is in a complementary relationship with the first mask.

16. The shingling method of claim 12, wherein in the paper feeding operation, the support beams extend from a paper feed side in the paper feed direction.

17. The shingling method of claim 16, wherein in the paper moving operation, the support beams extend from a paper discharge side in an opposite direction to the paper feed direction and interlace with the support beams extending from the paper feed side.

18. The shingling method of claim 16, wherein the support beams are part of an ink collector collecting ink digressing from the paper.

19. The shingling method of claim 17, wherein the support beams are part of an ink collector collecting ink digressing from the paper.

20. The shingling method of claim 12, wherein in the paper feeding operation, the paper is fed by 1/2 of a width of the nozzle unit in the paper feed direction.

21. The shingling method of claim 20, wherein in the paper moving operation, the paper is fed by 1/2 of the width of the nozzle unit in the paper feed direction.

22. The shingling method of claim 12, wherein in the paper moving operation, the second data is applied to a nozzle section positioned above the edge portion of the paper, and the other nozzle section operates in a shingling mode providing normal printing.

23. The shingling method of claim 12, further comprising moving the paper in the paper feed direction after completing front edge printing in the paper moving operation and performing printing in a normal shingling mode.

24. The shingling method of claim 12, further comprising performing printing in a normal shingling mode before the paper feeding operation, wherein printing is performed in a shingling mode providing rear edge printing in the paper feeding operation.

25. A printer comprising:

an ink head ejecting ink drops at an edge of a printing medium;

an ink collector positioned under the printing medium to collect excess ink from the

printing medium;

a plurality of first support beams extending at an upper portion of the ink collector in a printing medium feed direction to support the printing medium at a printing medium feed side of the ink collector; and

a plurality of second support beams extending at an upper portion of the ink collector in an opposite direction to the printing medium feed direction and alternately arranged with the plurality of first support beams to support the printing medium at a printing medium discharge side of the ink collector.

26. The printer of claim 25, wherein the ink head comprises an ink nozzle to eject ink drops on the printing medium when the ink head moves in a scan direction.

27. The printer of calim 26, wherein the ink collector is located under the printing medium and has a width corresponding to the width of the nozzle unit.

28. The printer of calim 26, wherein the ink collector is located under the printing medium and has a width wider than the width of the nozzle unit.

29. The printer of claim 27, wherein the ink collector further comprises:

a floor portion; and

a space portion having an opening above the floor portion to catch ink drops.

30. The printer of claim 29, wherein the space portion comprises a felt to absorb the ink drops caught by the space portion.

31. The printer of claim 25, wherein the ink collector comprises:

a plurality of space portions; and

a plurality of barriers separating the plurality of space portions,

wherein the first and second support beams integrally extend from the barriers alternately with respect to each other.

32. A printer comprising:

an ink head ejecting ink drops at an edge of a printing medium;

an ink collector positioned under the printing medium to collect excess ink from the

printing medium;

a plurality of first support beams extending at an upper portion of the ink collector in a printing medium feed direction to support the printing medium at a printing medium feed side of the ink collector; and

a plurality of second support beams extending from an upper portion of the ink collector at a printing medium discharge side of the ink collector and in an opposite direction to the printing medium feed direction, the plurality of second support beams being overlapped by the plurality of first support beams to support the printing medium during feeding thereof between the ink head and the ink collector.

33. A shingling method to provide edge printing, comprising:

feeding a printing medium passed ink nozzles of an ink head;

printing first data on a front edge portion of the printing medium at positions between a set of support beams supporting the printing medium; and

moving the printing medium in a feed direction by a predetermined distance and printing second data on the front edge portion of the printing medium at positions complimentary to the first data such that the complete edge of the printing medium receives printing data.

34. The shingling method of claim 33, wherein in the printing medium feeding operation, the first data is generated by performing masking using a first mask.

35. The shingling method of claim 34, wherein in the printing medium moving operation, the second data is generated by performing masking using a second mask, which is in a complementary relationship with the first mask.

36. The shingling method of claim 35, wherein masking is performed using a first mask in which a number of consecutive 0% printing columns, which are alternately distributed with a number of 100% printing columns, gradually changes in inverse proportion to the number of consecutive 100% printing columns in a scan direction perpendicular to the printing medium feeding direction.

37. The shingling method of claim 33, further comprising:

moving the printing medium in the feeding direction after completing front edge printing and performing normal shingling printing;

printing the first data on a rear edge portion of the printing medium at positions between a set of support beams supporting the printing medium; and

moving the printing medium in a feed direction by a predetermined distance and printing the second data on the rear edge portion of the printing medium at positions complimentary to the first data such that the complete edge of the printing medium receives printing data.

38. The shingling method of claim 37, wherein in the printing medium feeding operation, the first data is generated by performing masking using a first mask and the second data is generated by performing masking using a second mask, which is in a complementary relationship with the first mask.

39. The shingling method of claim 38, wherein masking is performed using a first mask in which a number of consecutive 0% printing columns, which are alternately distributed with a number of 100% printing columns, gradually changes in inverse proportion to the number of consecutive 100% printing columns in a scan direction perpendicular to the printing medium feeding direction.